

A machine-learning approach to managing diabetes and cardiovascular risk

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[A novel online tool](#) called INSIGHT offers a machine learning-based approach when prescribing sodium-glucose cotransporter-2 (SGLT2) inhibitors to maximize the benefit for patients with Type 2 diabetes.

The study, led by Yale researcher Rohan Khera, MD, MS, appears February 4 in the journal *Diabetes Care*. The study's first author is Yale Clinical Fellow, Evangelos Oikonomou, MD, DPhil, who works with Khera at the CarDS Lab.

Evidence from the [CANVAS](#) and [CREDESCENCE](#) trials suggests that SGLT2 inhibitors such as canagliflozin reduce the risk of hospitalizations and death from [atherosclerotic cardiovascular disease](#) (ASCVD) in adults with Type 2 diabetes. However, canagliflozin prescriptions are expensive and widely underutilized.

The study describes an individualized approach which addresses a common clinical question for ASCVD risk management: Which patients with Type 2 diabetes and an elevated risk for [cardiovascular disease](#) are most likely to benefit from canagliflozin? INSIGHT's algorithms use distinct patient phenotypes such as the duration of Type 2 diabetes, elevated [blood pressure](#) or hypertension, smoking habits, and [cholesterol levels](#) to identify such patients.

Rather than relying on observations or assumptions, machine learning enables researchers to analyze vast amounts of clinical data and discover patterns or clues that might otherwise have been overlooked. In this instance, a [machine learning](#) approach helps isolate the characteristics that best determine the effects of canagliflozin for CV risk reduction. The study notes that one-third of patients were identified who would benefit the most from this therapy, which may help more targeted implementation studies.

The authors collected data from over 10,000 patients using an open science project known as the Yale University Open Data Access Project. The findings were first presented at the 2021 Northwestern Cardiovascular Young Investigators' Forum, where Oikonomou received an award for his presentation, "A Machine Learning Approach to

Individualize the Cardiovascular Benefits of Canagliflozin Based on Participant-level Analyses of the CANVAS Trials."

More information: Evangelos K. Oikonomou et al, Phenomapping-Derived Tool to Individualize the Effect of Canagliflozin on Cardiovascular Risk in Type 2 Diabetes, *Diabetes Care* (2022). [DOI: 10.2337/dc21-1765](https://doi.org/10.2337/dc21-1765)

Provided by Yale University

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